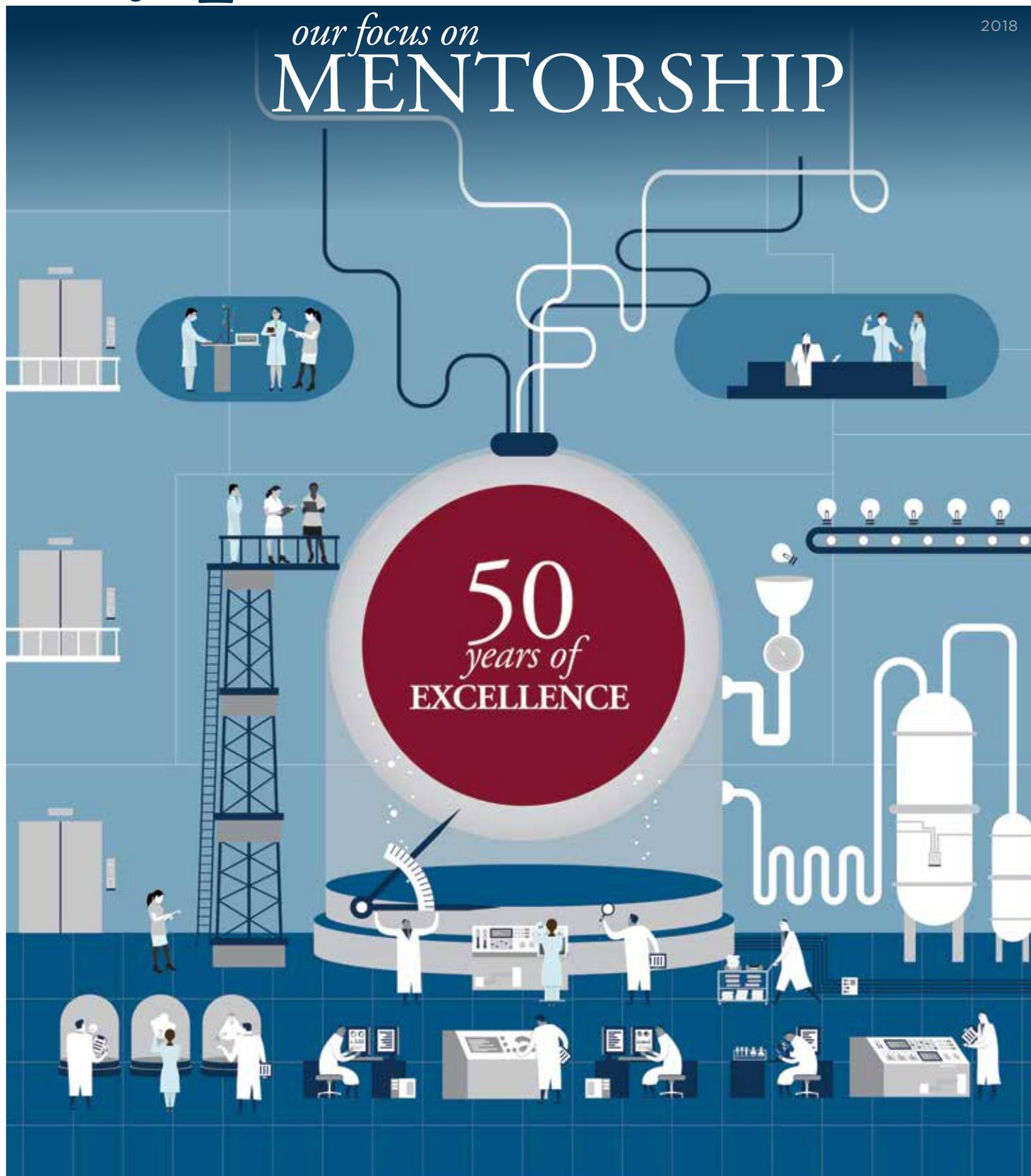


Hypothesis

SCHOOL OF GRADUATE AND POSTDOCTORAL STUDIES

our focus on
MENTORSHIP

2018



CELEBRATING A HALF-CENTURY *of* EXCELLENCE



THE UNIVERSITY JOINS THE SCHOOL OF GRADUATE AND POSTDOCTORAL STUDIES (SGPS), ESTABLISHED IN 1968, IN CELEBRATING A HALF-CENTURY OF EXCELLENCE IN THE EDUCATION AND TRAINING OF SCIENTISTS WHO ADVANCE KNOWLEDGE THROUGH PROFESSIONS IN ACADEMIA, INDUSTRY, GOVERNMENT AND THE NONPROFIT SECTOR.

Above: Valentina Olivera-Pasilio and Feras Altwal, both graduate students in neuroscience, collaborate in the lab. Left: 1978 — Mentor and student collaboration.

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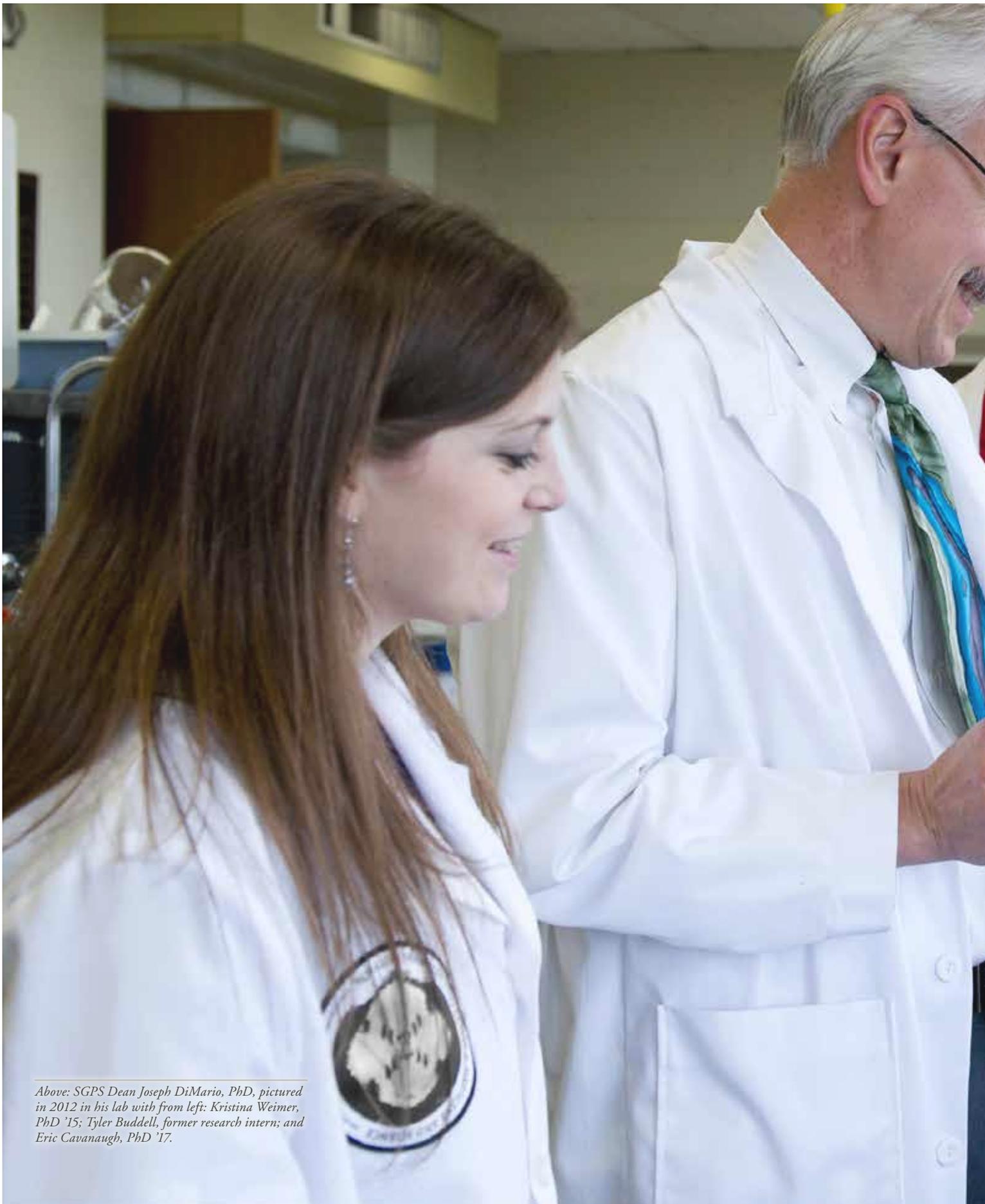
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Publications *and* Presentations

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*Cover photo: SGPS 1968–2018:
Celebrating 50 years of innovation in
biomedical science and graduate-level
education.*



Above: SGPS Dean Joseph DiMario, PhD, pictured in 2012 in his lab with from left: Kristina Weimer, PhD '15; Tyler Buddell, former research intern; and Eric Cavanaugh, PhD '17.



our focus on
MENTORSHIP

As with any milestone anniversary, the 50th anniversary of the School of Graduate and Postdoctoral Studies provides the opportunity to pause and reflect on the history of graduate education and its future prospects. Whereas the overall purposes of graduate education have remained, many aspects of graduate education have significantly changed over 50 years. Although this is not the forum to discuss all these changes, in keeping with the overall theme of mentorship in this edition of Hypothesis, a brief discussion of the changes in the purposes and approaches to mentorship over time is certainly warranted.



Graduate education in the United States has been the pinnacle of the U.S. educational system and, arguably, the global exemplar of success. This status has characterized U.S. graduate education over the past century, and it remains a defining strength of our national identity throughout the world. The quality of our graduate education was realized through visionary investment, innovation and an incessant quest for the discovery of new knowledge by government, societal and academic leaders, faculty and students alike.

An Intellectually Rich Environment

At its core, graduate education in the United States was originally envisioned in the early 1900s as a means to address two fundamental needs — personal need for intellectual fulfillment and the societal need for citizen-scholars. Graduate studies at American universities provided an intellectually rich environment for individuals to seek and discover new knowledge, to understand nature and the human condition, and to become leaders in academia, industry and government. Students entering graduate programs honed their intellectual skills, addressed challenging questions of nature and society, and provided new insights and discoveries. Personal intellectual fulfillment was gained in the act of graduate education itself.

Graduate education also fulfilled a societal need. Universities provided fertile ground for growth of intellectual leaders who served society in government positions at state and national levels. Graduate programs produced leaders, innovators and entrepreneurs for a nascent industrial and manufacturing power. Such outcomes aligned with the Jeffersonian argument that a well-educated citizenry improved democracy, and therefore the goal of graduate education was to meet the needs of society.



A Fundamental Shift

Mentorship has always been a key characteristic of graduate education. Its purpose has remained relatively unchanged over time — to improve the graduate experience through a one-on-one professional relationship that conveys knowledge, skills and insight. Through most of the twentieth century, the U.S. and world economies and workforce structures were based on production through manufacturing and agriculture. As such, training of the future labor force was also production-oriented, fostering an apprenticeship model in which skills were passed from mentor to mentee in specific industries.

In graduate education, this same apprenticeship model prevailed for many years. It was sustained by the reasonable expectation that a graduate student, through mentored training, could acquire an academic position and thereby effectively replace the mentor. Furthermore, the graduate workforce was comprised of students with little diversity in race, ethnicity, gender, regional or socioeconomic background. This resulted in a simplified mentoring approach that defined specific career pathways. The mentor-student relationship was very hierarchical and accurately described as an employer-employee relationship with few professional considerations or protections for the “employee.” Graduate students contributed to their mentor’s scholarly activities with the goal of helping the mentor to disseminate their work, typically attributed to mentor by name (e.g., Dr. Smith’s lab at the University of Example).

In other words, within the apprenticeship model framework, the employees went to work and helped to manufacture a product that the company, named after the boss, then sold. Students learned on the job “by doing” scholarly work. Importantly, the learning was secondary to the goal of helping the professor boss and producing the scholarship product.

As the manufacturing skills-based economy transitioned to the current knowledge-based economy, workforce needs changed from a demand for specific skills to a demand for critical thinkers, problem-solvers, analysts and those who bring specific knowledge, behaviors and attitudes to team-based employment settings. Spurred by a reduction in career opportunities in academia, the nature of mentorship has changed from an apprenticeship model of specific skill development to a holistic professional development model in which students are prepared for potentially diverse career options.

This is a fundamental shift in the nature of the professor-student mentoring relationship. Mentorship now necessitates preparation of students to enter careers in academia, industry, communications, law, outreach and advocacy, government, nonprofit organizations, etc. The diversity of career opportunities is now better matched with diversity of student career goals. Augmented by significantly increased diversity in graduate student demographics, mentors must now diversify their perspectives on career options, diversify their activities and approaches to meet student career goals, and diversify their own mentorship skills to meet the needs of a diversified student population of future intellectual leaders. Most important, current mentorship is student-centered. The student-mentor relationship focuses on the student as the top priority in graduate education. The student’s education and professional development are not byproducts of scholarly activity. They are intentional and planned, in accord with the goals of the student.

Joseph X. DiMario, PhD
Dean, School of Graduate and Postdoctoral Studies

“Our progress as a nation can be no swifter than our progress in education. The human mind is our fundamental resource.”

John F. Kennedy,
35th president of the United States



INSPIRING MENTORS



THE INSPIRE PROGRAM (INFLUENCE STUDENT POTENTIAL AND INCREASE REPRESENTATION IN EDUCATION) IS A MENTORING AND APPLIED RESEARCH PROGRAM FOR LATINO STUDENTS INTERESTED IN STEMM FIELDS. THE INITIATIVE IS SPEARHEADED BY SGPS STUDENTS, AND AT THE FOREFRONT OF THE PROGRAM ARE MAXINE LOH AND ADRIANA FRESQUEZ, THE INSPIRE GRADUATE STUDENT COORDINATORS.

Both Adriana and Max joined the INSPIRE program because of their experience with similar projects: Max worked with the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) during her undergraduate time at DePaul University, and Adriana received an internship in inpatient pharmacy through the Children's Hospital of Colorado. Their experiences inspired them to share their opportunities and love of medical research with others. They coordinate their efforts with Jesus Ruiz, Director of Community Engagement and Service Learning at RFU, who is a tireless and resourceful advocate for the incoming mentees.

INSPIRE is SGPS driven, and the majority of program mentors are pursuing PhDs. However, Max and Adriana have made it a goal to increase interprofessionalism in recent years, including CMS, Scholl and dual-degree students as mentors. Dr. Hector Rasgado-Flores, a faculty advisor to the program, praised Adriana and Max's initiative to open career options and new, interprofessional avenues of



*Top left: Graduate students Max Loh and Adriana Fresquez in the lab.
Above: Local high school students with the graduate student mentors, faculty and staff who guide them through the INSPIRE experience.*



“As a mentee yourself, you understand steep learning curves. INSPIRE doesn’t handhold — it’s a sink-or-swim situation.”

scientific pursuit for the curious program participants. They invited the deans of each RFU school and several Chicagoland STEMM professionals to describe their training, research and careers to students, opening the world of medicine and science across a wide variety of fields.

The INSPIRE program is inspirational for both participants and their mentors. When asked about the most rewarding part of the INSPIRE program, Adriana states, “For me, it’s when you see a student latch on to a key concept and say, ‘This is what I want to do for the rest of my life.’ Seeing a student’s enthusiasm skyrocket is an incredible thing.”

For Max, she treasures the culmination of the program, when mentees present their findings to their peers. “As a mentee yourself, you understand steep learning curves. INSPIRE doesn’t handhold — it’s a sink-or-swim situation where they are forced to become experts in a field, become independent and master themselves. To see them master both the science and the science communication is phenomenal. At the end of every presentation, you pinch yourself and say, ‘Oh my gosh, they’re in high school!’”

That rush of pride at seeing their mentees succeed has made both Max and Adriana even more devoted to mentoring going forward. The future of mentorship is increasingly multidimensional — their students will need not just academic tools, but multifaceted support for finances, familial support, career advising and more. The INSPIRE program has illuminated the changing dimensions of mentorship. “Something we talked about a lot last summer is that we can provide these students all the tools in the world to be successful, but until we change the environment in which they will be living, practicing, working — nothing will change,” Max explains. “We have to make the scientific environment welcoming to them.” 

SGPS 50th FACULTY REFLECTION



BARBARA VERTEL, PhD,
professor of cell biology and anatomy

Students today are more engaged and have a more structured experience of graduate education. They are represented by the Graduate Student Association, run events like the All School Research Consortium and operate as a cohesive unit. We were a community back in the day, but it wasn’t nearly as well organized. Graduate education has been trending in this direction for some time. There’s now a contract between a student and their advisor, as well as independent development plans being implemented to oversee progress. The intention is much stronger across a broader landscape of education. This inclusive, community-building mindset prepares graduate students to be part of a proactive scientific community through their educational culture. Going forward, the hope is that the global scientific community will become more and more interconnected.

SCIENCE *and* COMMUNITY



Graduate student Julia Love used gardening as a tool for education and science communication.

GRADUATE STUDENT JULIA LOVE DISCUSSES HOW AN INTERPROFESSIONAL APPROACH HELPED HER FRANKLIN FELLOWSHIP PROJECT SUCCEED.

Each year, 12 RFU students are awarded the Franklin Fellowship, dedicating themselves to interprofessional service, excellence in education and community leadership. Graduate student Julia Love committed her community garden project to the intellectually and developmentally disabled (IDD), partnering with the Little City Foundation to improve health outcomes in the IDD community.

“They were waiting outside the door, so ready to start gardening — it was just wonderful to have that level of interest and participation.”

Her Little City, Big Garden project was inspired by her mother’s work with IDD children as a special education teacher. Julia expanded the program with the interprofessional expertise available at Rosalind Franklin University. She consulted with Jeff Damaschke, MS ’03, DPT ’04, PhD, to tailor the repetitive physical labor of gardening in a way that supported the health of IDD gardeners. She also worked with nutrition specialist Hope Bilyk, MS, RD, LDN, to ensure the garden’s vegetables would provide the best nourishment for their dietary needs.

Julia engaged participants in every part of the process, including building and planning the garden. She took the participants to Home Depot so they could play a role in choosing seeds and learning about the tools they would be using in the garden. She remembers the process fondly, saying, “It was a lot of goofy fun!”

The shared community fun made for a more engaged gardening experience, and having others to interact with was a big benefit for both Julia and the other gardeners. Providing guidance and direction was easy and enjoyable. “They understand instructions very well and are high functioning, so directions like ‘Be gentle, that’s a living thing’ were easy for them to follow.”

By getting participants outside, active and growing food that would be beneficial for their diet, Julia’s project provided improved health outcomes for the IDD community, particularly mental health. The garden gave participants something new to work on and an opportunity to be outside, making them happier and more actively engaged. According to Julia, that excitement was infectious. “The guys were all just so enthusiastic. They’re waiting outside the door and so ready to start gardening! It was just wonderful to have that level of interest and participation.”

Initially, Julia came to the project armed with technical PowerPoint files and handouts, eager to educate participants about nutrition and photosynthesis. As time went on, she adjusted her teaching to fit the audience, providing powerful images and tactile lessons that strongly engaged her IDD learners’ senses.

Julia’s Franklin Fellowship project transformed into an opportunity for medical science to interact directly with the community. Julia loves science communications — to meet the needs of this particular audience, the best outcome was less about training and more about directly improving their mental health. More than anything, it brought home the importance of bringing science to the level of the community. 

SGPS 50th FACULTY REFLECTION



ERIC WALTERS, PhD,
associate dean for research and professor of pharmaceutical sciences, College of Pharmacy

When I was a graduate student, the mentality was “nose to the grindstone,” all day, every day. The research mindset has since shifted to a better work/life balance. We’ve achieved a more holistic approach to mentoring, encouraging students to look after their health and maintain that equilibrium. As associate dean for research, I’m also helping young faculty juggle the different pieces of their jobs — balancing research and mentorship while navigating academic bureaucracy in IRB applications, grant application feedback and more. The thing that I realize is in the beginning, I needed a lot of mentoring. I’m glad someone did that for me; now it’s time for me to do it for someone else.



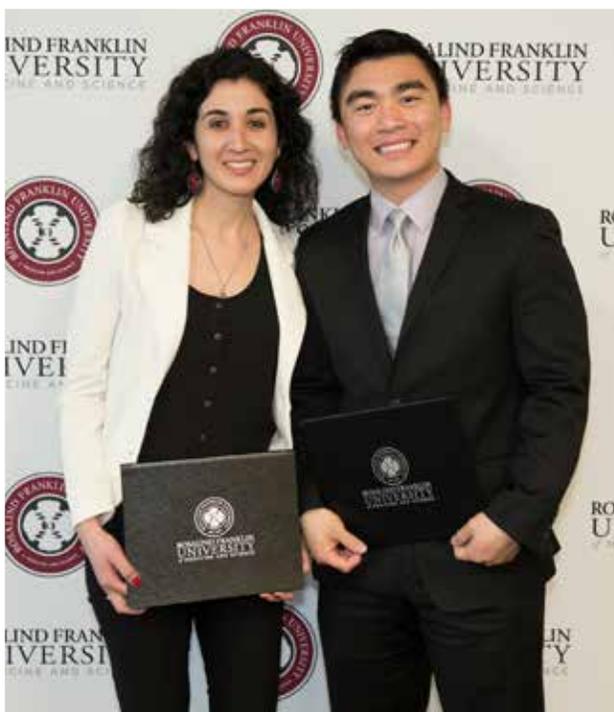
Student and Postdoc Events



Clockwise, from top left: Timothy Cheung receives the award for Outstanding Service in Tutoring at the 2018 RFUMS student awards. A presenter at ASRC explains his research to interested colleagues. Graduate students network and present their research at Society for Neuroscience 2017 in Washington, DC. Faculty member Dr. Eric Walters serves graduate students Kelly Deobald and Adriana Fresquez "Late Night Breakfast" during Student Wellness Week. Postdocs take a break to relax and network during the "Escape Room Challenge," part of SGPS' National Postdoc Appreciation Week celebrations.



Clockwise from top: Isha Dey, Maria Bompolaki and Soumyabrata Munshi celebrate during Commencement 2018; Graduate students Alyssa Littlefield, Sarah Mustaly and Max Loh participate in Hijab Awareness Day. Conor Murray receives the SGPS Student Leadership Award at the 2018 RFUMS student awards. Valen Olivera and Timothy Cheung accept the Commitment to Research Award on behalf of the ASRC organizers at the 2018 RFUMS Student Leadership Awards.





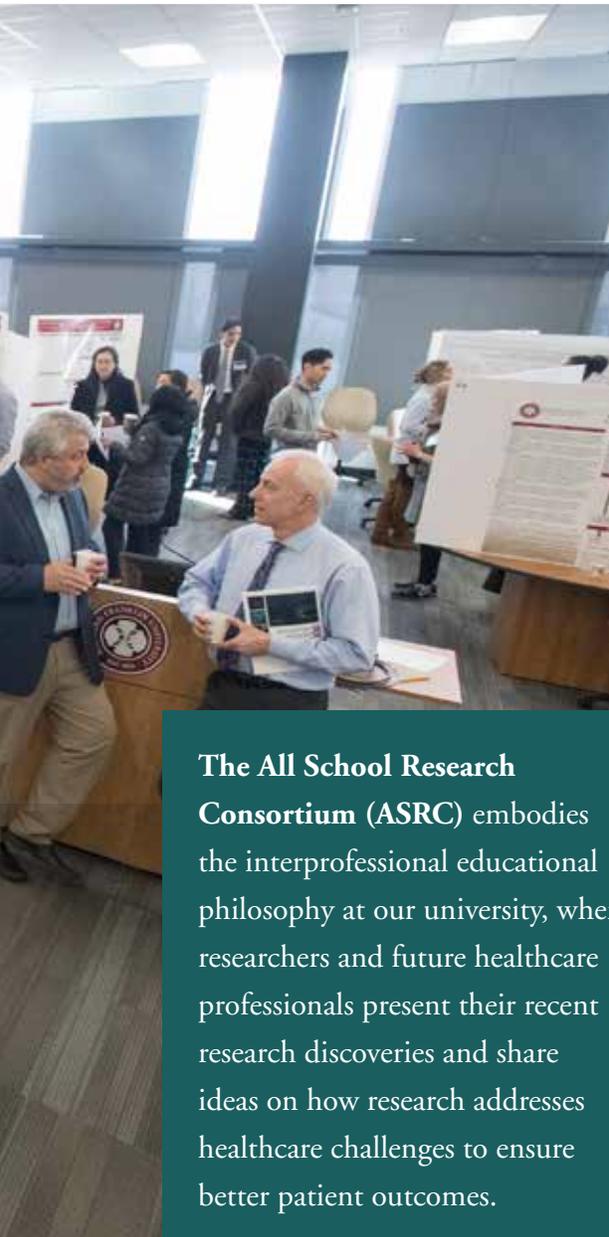
ALL SCHOOL RESEARCH CONSORTIUM



Candidates present their work to judges volunteering from all five colleges. This presentation practice helps the student build communication skills and professionalism.



The ability to convey complex research to laypeople, in this case judges from outside the student's discipline, is a critical communication skill.



The All School Research Consortium (ASRC) embodies the interprofessional educational philosophy at our university, where researchers and future healthcare professionals present their recent research discoveries and share ideas on how research addresses healthcare challenges to ensure better patient outcomes.

TIMOTHY CHEUNG, DPM-PhD CANDIDATE

“The All School Research Consortium (ASRC) is a university-wide, student-run event that highlights student research and reinforces the university’s core interprofessional principles. The ASRC committee was formed to designate specific responsibilities between select graduate students to organize the annual event. The committee consists of three distinct chair positions: marketing, communications and finance. This previous year, I was blessed with the opportunity to work with the ASRC committee as the marketing chair, alongside Valentina Olivera and Kelly Deobald, the finance and communications chairs, respectively.

“As the marketing chair, I was tasked to act as a liaison between the committee and the Graduate Student Association, Student Affairs and the rest of the university community. With the help of the committee members and the Division of Marketing and Brand Management, we were able to adequately and appropriately publicize the event. Although this was my main role on the committee, everyone collaborated on specific tasks such as selecting the keynote speaker and oral presentations. Furthermore, we worked together by willingly assisting each other with overlapping tasks and motivating one another in our responsibilities toward ASRC and our own laboratory.

“Once the ASRC was underway, I gained a new and unique experience — not as the marketing chair, but as a participant. I presented my scientific poster at ASRC 2018, and it was exciting for me to explain the product of my efforts to my classmates as well as to students and faculty from the different professions within the university. Their praises, comments and suggestions all brought different perspectives and revealed uncharted implications of my work.

“Having both experiences of coordinating and participating in the ASRC helped me get a broader outlook of the event. Ultimately, it was my experience as a participant that renewed my sense of importance for the ASRC, and it is this renewal that motivates me to continue working with the ASRC committee.” 



Guest speaker Stefano Guandalini, MD, professor emeritus and chief of pediatric gastroenterology, hepatology and nutrition, University of Chicago, delivers the keynote address at ASRC 2018.



Stefano Guandalini, MD (second from right) with ASRC graduate student organizers Timothy Cheung, Valentina Olivera and Kelly Deobald.

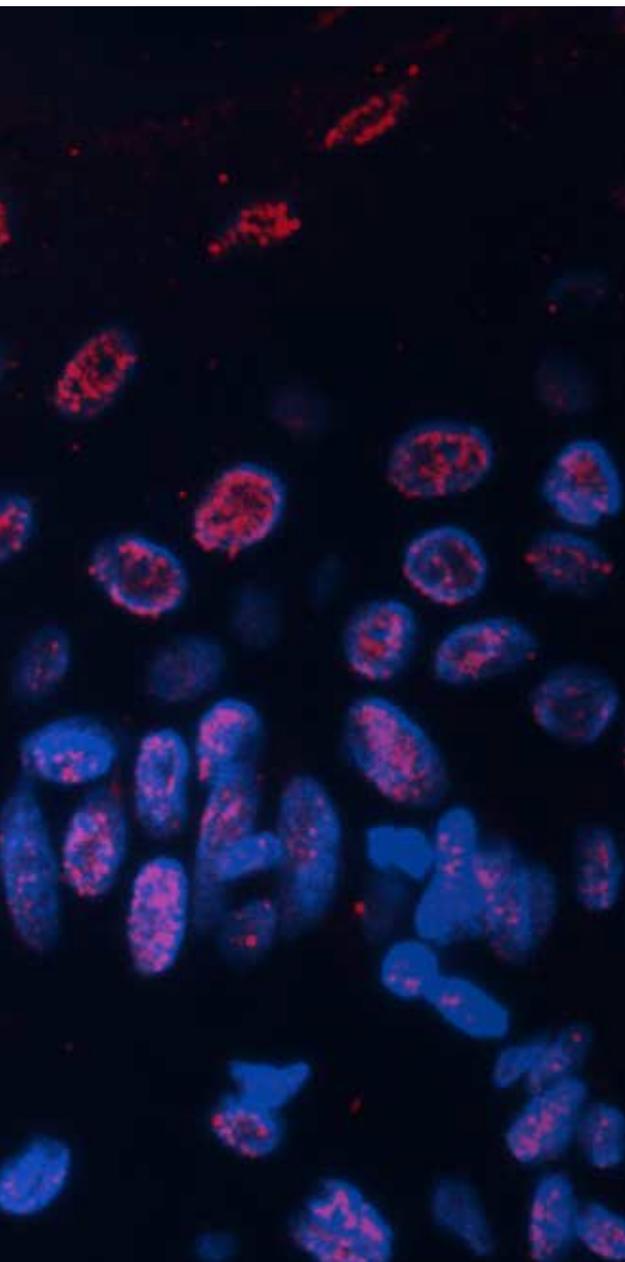
ART *from* the BENCHTOP

The annual “Art from the Benchtop” show, presented by the Graduate Student Association, brings the art and love of science out from the laboratory for everyone to see. In doing so, the images transition from analytic scientific assessment to emotive conceptual art.



Balancing work and leisure is important to one's well-being. Expression through art is one way students can combine the two activities.





ASRC welcomes researchers from intern through postgraduate. Dr. DiMario congratulates the winner for Best Postgraduate Talk: Dr. Kumari Asha.



Dr. Marr presents the CMS Best Scientific Talk certificate to student Akop Seksenyan.



ASRC organizers grow from the experience of managing this project, growing new skills that blossom into a successful event. Valen, Kelly, and Tim received kudos from the SGPS Dean's Office for their efforts.



Dr. Walters awards College of Pharmacy student Yelena Sahakian with honors for Best Scientific Talk.

TRANSFERABLE SKILLS



Jiaju Wang, PhD '17, recently completed his postdoctoral fellowship and is now a publications manager with Takeda Pharmaceuticals.

Jiaju Wang, PhD '17

Takeda Postdoctoral Fellow, SGPS

AS A PUBLICATIONS MANAGER FOR TAKEDA PHARMACEUTICALS, JIAJU WANG HAS A KEEN UNDERSTANDING OF THE SKILLS NECESSARY TO BE SUCCESSFUL AT THAT JOB. CRITICAL THINKING. LITERATURE RESEARCH. AND THE ABILITY TO PRESENT COMPLEX CONCEPTS IN A VARIETY OF WAYS BASED ON THE AUDIENCE. JIAJU CREDITS THREE MENTORS IN PARTICULAR FOR HELPING HIM DEVELOP THESE SKILLS.

“My primary mentor was my principal investigator, Dr. Donghee Kim, professor of physiology and biophysics at RFU. He taught me how to do research properly, how to analyze the data critically and give fair and high-level interpretations of the data. He also taught me how to develop a hypothesis and confirm or disconfirm the hypothesis,” Jiaju said. “I would also consider Dr. Theresa Peterson [Director, Global Publications, Takeda], alumna of SGPS, and Dr. Joseph DiMario, dean of SGPS, to be my mentors. As I was finishing my PhD, I attended a seminar hosted by Dr. Peterson and Dr. DiMario, where they were talking about a postdoc opportunity at Takeda, which ultimately I applied for and ended up getting. It was presented as a way to make a transition to industry or some alternative career pathway apart from academics. Theresa taught me tons of practical skills to navigate through the system and gave me great projects to work on during the fellowship. So in that sense, I would say that Dr. Peterson and Dr. DiMario are the mentors of my career development, and Dr. Kim is the mentor of my academic development.”

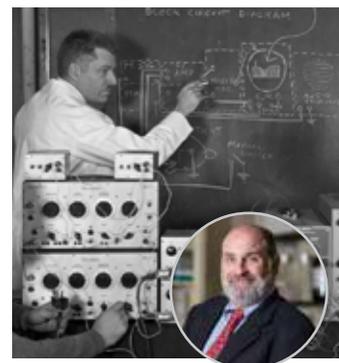
After earning his PhD from RFU and completing a postdoc year at Takeda, Jiaju was offered a full-time position at Takeda as a publications manager on the U.S. medical affairs team. He said it’s challenging but rewarding work that allows him to apply the skills and lessons he learned from his mentors.

“Many of the skills I learned from Dr. Kim’s lab are transferable to industry roles; for example, critical thinking is a skill I hold very dearly from Dr. Kim’s mentoring,” Jiaju said. “Every publication has its own agenda, but it’s important to have your own independent thinking to look at their data carefully and see if the data supports the hypothesis.

“Literature research is also a very critical skill to survive in industry, especially in a publications role,” Jiaju added. “There can be thousands of pieces of literature published online or in the public domain talking about the disease area you’re working on, and it’s important to identify the truly impactful ones and synthesize the key messages from the literature.” 

“Many of the skills I learned from Dr. Kim’s lab are transferable to industry roles.”

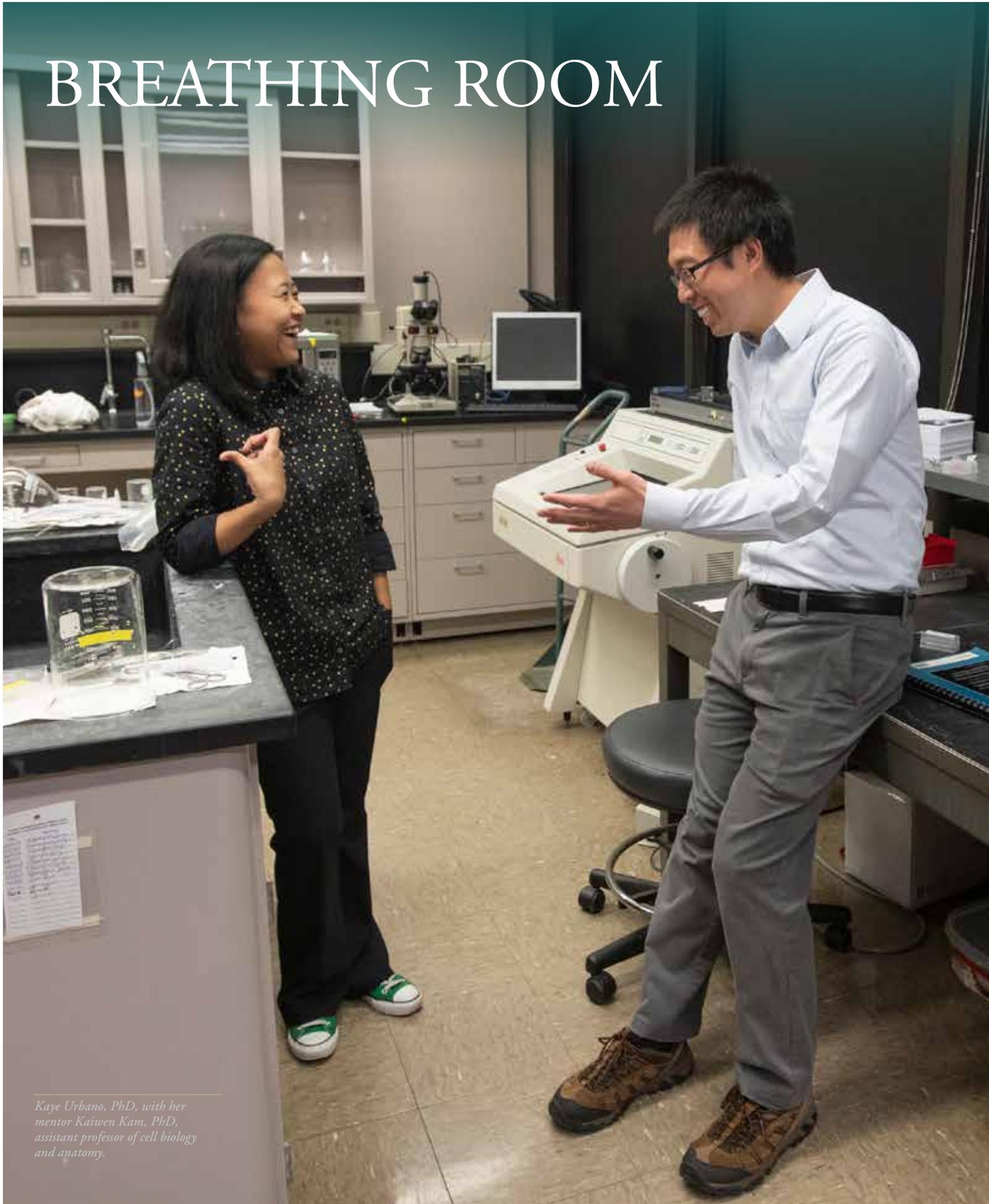
SGPS 50th FACULTY REFLECTION



MARC J. GLUCKSMAN, PhD,
director, Center for Proteomics and Molecular Therapeutics; professor and chair, biochemistry and molecular biology

When I was a graduate student there was a 3:1 ratio of students who went on to academia versus industry; those were the only two choices. Now the ratios are reversed, with other options available in scientific writing, legislative liaisons and entrepreneurship, as well as areas we can’t imagine today. We need to aid students with a “non-lab” toolkit to thrive in current and future job environments. The focus in mentoring today must be on the individual student with regard to where their abilities and passions lie. I keep my eyes on what will make someone smile every morning and marvel that they get paid for what they truly want to do. As a student, I was exposed to brilliant as well as genuinely fun, caring people with whom I established lifelong relationships. I can only aspire to be like mentors I had — truly standing on the shoulders of the giants of science.

BREATHING ROOM



Kaye Urbano, PhD, with her mentor Kaiwen Kam, PhD, assistant professor of cell biology and anatomy.

Catherine “Kaye” Urbano, PhD

Postdoctoral research associate in the Center for Brain Function and Repair

WHEN KAYE URBANO APPLIED FOR A POSTDOC POSITION AT RFU, SHE LEARNED IT HAD JUST BEEN FILLED. BUT A SERENDIPITOUS OVERLAP OF RESEARCH GOALS WITH DR. KAIWEN KAM OPENED THE DOOR.

“Dr. Kam and I discussed studying vocalizations and how vocalizations are produced and what mechanisms may support that,” Kaye said. “We found a project that extended the work I was doing as a grad student in a natural direction that brought it more toward the biological sciences, where I was really interested in heading for my own research.”

Dr. Kam agreed that the timing of Kaye’s application was a stroke of luck. “My research focuses on the neural control of breathing and breathing-related behaviors, and how you coordinate breathing with other behaviors,” he explained. “Vocalization is one of those behaviors where we have to be able to shape breathing in order to generate vocalizations. I had not planned on even going in this direction for a long time, but when Kaye applied to the lab I figured the opportunity is here, and if I miss it then I may never come back to it again.”

In addition to her work with Dr. Kam, Kaye also serves as a mentor to graduate and undergraduate students who come to Dr. Kam’s lab for summer research internships. This past summer, Kaye spent eight weeks mentoring a podiatry student from Scholl College, an experience she described as both challenging and gratifying.

“He came to our lab with definite ideas about the skills he wanted to work on over the summer: learning new techniques, thinking critically — he was a great challenge to work with, in the sense that it had been a while since I worked with someone with no research background,” Kaye said. “It was great to see how he reacted to situations and how he overcame any initial frustrations; he really settled into it by the end.”

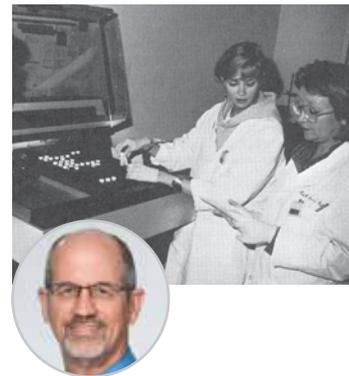
Dr. Kam echoes Kaye’s sentiments about the rewards of mentoring, and he’s grateful for the lessons he learned from his own mentors.

“One of the best lessons I learned was to give a trainee space, to step back and let them explore and really engage in science,” Dr. Kam explained. “It’s easy to get lost in the pressure and the competitiveness of science and the need to generate data, and you lose the experience of science as being curious about the world. Both of my mentors gave me time, and it made the research more enjoyable. So whenever I have a trainee or a graduate student, I try and give them as much time and space as possible to explore.” 

“One of the best lessons I learned was to give a trainee space, to step back and let them explore and really engage in science.”

SGPS 50th

FACULTY REFLECTION



GORDON L. PULLEN, PhD '82,
assistant professor of physiology and biophysics and assistant dean for basic science education, Chicago Medical School

My mentor at SGPS was Tim Hansen, and I do try to emulate his encouraging, accessible style with my students. Creating an approachable, non-threatening environment is the main focus of my mentoring mindset. Through years of teaching and mentoring experience, I have gradually learned when to chase students down and how to prevent them from isolating themselves when they are struggling. It’s always a balancing act: encouraging them to get help when they need it and then providing them the tools to help themselves. In the future, I see the training of medical students following the example already set by graduate education. To combat rising rates of burnout, we want to provide more one-on-one mentoring to achieve a more personal, comprehensive connection to all students.

FINDING *the* RIGHT PATH



“When I found the description of the medical science liaison position, I thought, ‘Wow, that’s exactly what I want to do.’”

Shannon Blume, PhD '15, catches up with her mentor Amiel Rosenkranz, PhD, during a visit to RFU.

Shannon Blume, PhD '15

Cellular and Molecular Pharmacology

SHANNON BLUME IS CONFIDENT SHE'S FOUND THE RIGHT CAREER AS A MEDICAL SCIENCE LIAISON WITH ABBVIE'S MEDICAL AFFAIRS (NEUROSCIENCE) DIVISION. BUT THAT WASN'T ALWAYS PART OF HER PLAN.

"It was very difficult for me to even consider leaving academics. I loved electrophysiology. I loved the challenge, and I never grew tired of it," Shannon said. "But then I realized that spending all of your time in the lab is not the reality for research faculty today. It is really difficult to run a lab, have time to write grants to keep a lab funded, do the experiments you want to do and have time to mentor graduate students and postdocs."

Shannon knew she wanted something that allowed her to stay current on the scientific literature and apply the business skills she learned through participation in committees and career development groups at RFU. "I served as the graduate student member of the IACUC (Institutional Animal Care and Use Committee); I was also on the Library Advisory Committee, the Student Library Advisory Committee and the GSA," Shannon said. "I wanted to learn about all aspects of being an academic scientist, not just what happened in the lab."

It was during her search for a different career path that Shannon started to seriously consider the role of a medical science liaison (MSL). "When I found the description of the MSL position, I thought, 'Wow, that is exactly what I want to do.' I can continue reading all of the current literature, give presentations and engage in scientific discussions with clinical researchers and physicians," Shannon explained. She also discovered a benefit not often seen when working in the basic sciences.

"Now I can see firsthand how scientific research improves patients' lives. One thing about the basic sciences, you do not see the work you are doing in the lab has an impact on patients; it could be 20 or 30 years before your work is reflected in the clinical field. As an MSL, I deliver high-level scientific education and engage in scientific discussions with leading healthcare professionals. Another bonus is the opportunity to travel all over the country and meet new people — these aspects of the MSL role sold me on this career path."

Shannon's next step was to add healthcare-focused business skills to better market herself for the MSL role. "I started taking coursework and volunteering in clinical labs; I sat in on IRB committee meetings to better understand the process of approving clinical trial protocols; I completed a research administration fellowship with the Clinical Research Support Office at the Children's Hospital of Philadelphia Research Institute and worked on improving clinical trial recruitment; I did consulting through the UPenn Biotech Group (healthcare consulting) with the Wharton School of Business — along the way other job opportunities opened up, but they did not seem to fit my skill set as well as the MSL role did. Now that I am an MSL, it is everything I expected and more. It is like a dream come true."

Reflecting on her time as a graduate student in the lab of Amiel Rosenkranz, PhD, director, Brain Science Institute, Shannon recalls, "I really appreciated Amiel's mentorship style; he allowed each individual to develop their own research interests and critical thinking skills.

"I find myself using the technique in my current job," she added. "Recently, we added new MSLs to our team. During the training process we encouraged the new team members to develop their own approach to their business. I found myself offering the same advice Amiel used to give to me. Good mentorship matters!" 

SGPS 50th FACULTY REFLECTION



JANICE H. URBAN, PhD,
director, Center for Neurobiology of Stress and Psychiatric Disorders; professor and chair of physiology and biophysics

I was fortunate to have had a strong graduate advisor who supported me throughout most of my career. That relationship was very important to me and something I felt was important to cultivate and continue for my students. For the most part, scientific careers are not unidimensional and so one can, and should, seek out mentors who can provide support with teaching, identifying career paths and networking, in addition to research. My role as a mentor is not one-size-fits-all; how I support and advise students is heavily dependent on each student's personal needs, abilities, interests and career goals. My job is to ensure that when they leave this institution, they have the ability, tools and confidence to become successful researchers. I want them to enjoy their time in the lab as much as possible and hopefully that enthusiasm will carry forward throughout their careers.

BALANCING DUAL ROLES



*Sidharth Mahapatra, MD '09, PhD '07,
in his lab at the University of Nebraska
Medical Center.*

“I told my father I wanted to be a healer — not so much a doctor, but a healer.”

Sidharth Mahapatra, MD '09, PhD '07

Biochemistry and Molecular Biology

SIDHARTH MAHAPATRA, MD '09, PhD '07, ON BEING A PHYSICIAN, A SCIENTIST AND A MENTOR — AND HOW THE LATE KENNETH NEET HELPED HIM BECOME ALL THREE.

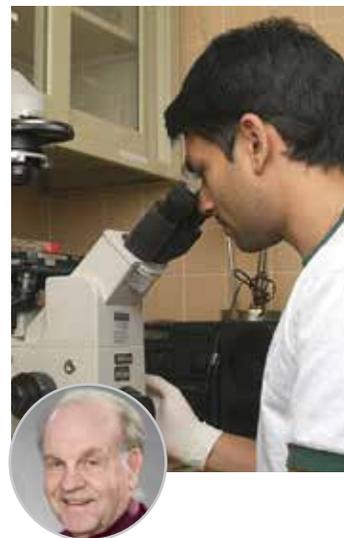
Following the example of a grandfather, two uncles and a much beloved pediatrician, Sidharth Mahapatra pursued his medical dreams while studying at Knox College in Galesburg, IL. Crafting a competitive application, Sid began a research project in the summer of 1998 in Dr. Mark Brodl's lab that culminated in a platform presentation at the 2001 Illinois State Academy of Sciences where he took first place — and fell in love with the lab in the process. “My mind was stimulated by the academic discovery process: hypothesis-driven, logical, data-oriented, the synthesis of the question, investigation and conclusion, followed by subsequent inquiries — but I didn't want to leave medicine!”

He found his solution in the combined MD/PhD program at SGPS, balancing his desire to personally treat and heal with the investigative process of scientific discovery. Under the tutelage of Dr. Kenneth Neet, Sid pursued the scientific process, constantly answering one question only to be faced with five more. Throughout his development, Dr. Neet always encouraged creativity: “When things don't follow the plan, when the experiment fails — what do you do? That's when creativity kicks in. You don't feel fear of failure. You keep moving forward.” That principle has guided Sid through the rest of his career.

Now an assistant professor in the Division of Pediatric Critical Care Medicine at the University of Nebraska Medical Center, Sid is able to think differently about clinical problems. “I take care of children in life-threatening situations or with multiple illnesses. We monitor changes in the trajectories of their disease processes. When I am presented with any change, I attend to it in the moment, helping and healing the patient. But after, I step back and ask the question, ‘What is the root cause of this problem?’ I take it from the bedside to the bench and wholeheartedly apply the academic discovery process to flushing out the why.”

Sid's current research is focused on medulloblastoma, the most common malignant CNS tumor of childhood. Balancing dual pursuits in clinical care and basic science is grueling, and would be unsustainable without the support of an excellent lab infrastructure under the mentorship of Dr. Surinder Batra. Sid is particularly grateful to his division chief, Dr. Mohan Mysore, and department chair, Dr. John Sparks, for designing a schedule with adequate protected time for his research; he is assisted in his work by two excellent postdocs, Ranjana Kanchan and Naveen Kumar Perumal, and his co-PI, Dr. Wasim Nasser. Deeply thankful for the dedication with which his postdocs sustain the work during his clinical hours, Sid hopes to give them the same generous attention and encouragement that he received from his own mentors. The laboratory is currently working to identify novel tumor suppressor and chemo-sensitizing genes, as well as testing targeted therapeutics.

With one foot in both worlds and a mind trained in compassionate creativity, Dr. Mahapatra's dual roles truly allow him to be the healer he dreamed of being as a child. 



SIDHARTH MAHAPATRA REMEMBERS KENNETH NEET

Sid has always been grateful for the example and encouragement of his mentor, the late Dr. Kenneth Neet. Dr. Neet was someone who fostered ideas rather than dictating or ordering. He often told Sid, “What's the worst that can happen? You fail? You have a lab and infrastructure here that allows you to fail. Get right back up and try again.” Sid fondly remembers Dr. Neet's focus on the primary success of his students rather than his own career advancement.

That is what Sid misses most now, and feels he took for granted in the past. “I cannot describe how impactful that was,” he explains. “It has absolutely colored the way I mentor my students and postdocs. If my mentees remember me the way I remember Dr. Neet, then that will be the highest success.”

In MEMORIAM

Kenneth Neet, PhD (1936–2017)



The university community was deeply saddened to learn of the passing of Ken Neet, professor emeritus of biochemistry and molecular biology and former associate dean of research. Colleagues and friends sent remembrances that conveyed the breadth of Ken's impact on the university and the field of biochemistry. Vice President for Faculty Affairs Dr. Judith Stoecker gathered these tributes and shared them with Ken's RFU family; below are a few excerpts that honor Dr. Neet as a scholar, leader, mentor and humanitarian.

"Ken contributed strongly to the education of students, from didactic lectures to medical and graduate students, to the teaching of undergraduate, MD, PhD and postdoctoral students in his laboratory. All that have been spoken to had nothing but exceptional praise for Ken as a mentor."

"As chair of the Department of Biological Chemistry, Ken transformed the department from a broad-based department to one that focused on protein structure and function, with an emphasis on X-ray crystallography. This emphasis continues today."

"Using his knowledge in protein chemistry, Ken made major contributions in the understanding of the structure/function relationship of nerve growth factor (NGF). It is fitting that Ken used DNA techniques in molecular biology to make specific changes in NGF — changes that he formerly did by 'chemical mutation.' Perhaps his defining work was illustrated by two publications, 'Construction of a mutated pro nerve growth factor resistant to degradation and suitable for biophysical and cellular utilization' in 2006, and 'Identification of critical residues within the conserved and specificity patches of NGF leading to survival or differentiation' in 2009. These articles nicely show Ken's skills and knowledge on protein chemistry used to decipher the molecular determinants of NGF."

"In memory of Ken, be like Ken and smile to a coworker, friend or even a stranger, and make them feel welcome. And don't be so quick to pre-judge someone because of where they came from."



University News

DR. WENDY RHEAULT NAMED INTERIM PRESIDENT

The university's Board of Trustees has appointed Wendy Rheault, PT, PhD, FASAHP, FNAP, as interim president of Rosalind Franklin University, effective Jan. 1, 2019. Dr. Rheault, who has served as provost since 2014, has held numerous leadership positions throughout her 35 years at RFU, including dean of the College of Health Professions and vice president for academic affairs, and possesses a strong record of commitment to education, to academic research, to expanding clinical and research opportunities for our students and faculty, and to continuous innovation in teaching and learning.

Dr. Rheault will assume her new role following the retirement of current president and CEO K. Michael Welch, MB, ChB, FRCP, at the end of 2018. The university is grateful for Dr. Welch's transformational leadership, which brought curricular innovations, crucial investments in research and important partnerships aimed at educating professionals who will lead the future of health care and medical research. Visit <http://rfu.ms> for updates on the presidential search process.

RESEARCH PARK UPDATE

The next phase of development on the Innovation and Research Park began with the arrival of steel girders in July, creating the framework of the new park. The first two floors are in place, with two more to follow shortly as construction continues.

The Innovation and Research Park, a four-story, 100,000 square-foot addition to our campus in North Chicago, is scheduled for completion by summer 2019. The building will feature state-of-the-art laboratories, meeting and office space for six new disease-based research centers which will be housed in the park, and space for commercial startups and national and international healthcare firms. More information about the new research park is available at <http://rfu.ms/research>.



Alumni News

Hal Skopicki, MD '88, PhD '90, has been appointed chief of cardiology in the Department of Medicine and deputy director of operations for the Stony Brook University Heart Institute in Stony Brook, NY.

Lisa Monteggia, PhD '99, was named the Barlow Family Director of the Vanderbilt Brain Institute in Nashville, TN.

Kalpit Shah, PhD '16, is first author on the article "LMTK3 Confers Chemo-resistance in Breast Cancer," published in *Oncogene*.

Jennifer Chang, PhD '18 is lead author on the article "Targeting Amyloid- β Precursor Protein, APP, Splicing with Antisense Oligonucleotides Reduces Toxic Amyloid- β Production," published in *Molecular Therapy*.

Soumyabrata Munshi, PhD '18, is first author on the article "Effects of Peripheral Immune Challenge on In Vivo Firing of Basolateral Amygdala Neurons in Adult Male Rats," published in *Neuroscience*.

WE WOULD LOVE TO HEAR FROM YOU!

Share your achievements, notify us of changes to your professional position or volunteer to become a speaker in our alumni speaker series, "Pathways Taken."

CONTACT
us with your news at:
<http://rfu.ms/sgpsupdate>

PUBLICATIONS *and* PRESENTATIONS

PUBLICATIONS

Chang JL, Hinrich AJ, Roman B, Norrbom M, Rigo F, Marr RA, Norstrom EM, Hastings ML (2018). Targeting Amyloid- β Precursor Protein, APP, Splicing with Antisense Oligonucleotides Reduces Toxic Amyloid- β Production. *Mol Ther*. 2018 Jun 6;26(6):1539-1551. doi: 10.1016/j.jymthe.2018.02.029. Epub 2018 Mar 6.

Donaldson TN, Jennings KT, Cherep LA, McNeela AM, **Depreux FF**, Jodelka FM, Hastings ML, Wallace DG (2018). Antisense oligonucleotide therapy rescues disruptions in organization of exploratory movements associated with Usher syndrome type 1C in mice. *Behav Brain Res*. 2018 Feb 15;338:76-87. doi: 10.1016/j.bbr.2017.10.012. Epub 2017 Oct 14.

Iqbal J, Sarkar-Dutta M, McRae S, **Ramachandran A, Kumar B**, Waris G (2018). Osteopontin regulates HCV replication and assembly via interaction with HCV proteins and lipid droplets and by binding to receptors, α V β 3 and CD44. *Journal of Virology*. April 2018, JVI.02116-17; doi: 10.1128/JVI.02116-17.

Kumari A, Sharma-Walia N (2018). Virus and tumor microenvironment induced ER stress and unfolded protein response: from complexity to therapeutics. *Oncotarget*. 2018;9:31920-31936.

Munshi S, Rosenkranz JA (2018). Effects of Peripheral Immune Challenge on In Vivo Firing of Basolateral Amygdala Neurons in Adult Male Rats. *Neuroscience*. 2018;390:174-186. doi:10.1016/j.neuroscience.2018.08.017.

Mustaly-Kalimi S, Littlefield AM, Stutzmann GE (2018). Calcium signaling deficits in glia and autophagic pathways contributing to neurodegenerative disease. *Antioxidants & Redox Signaling*. 29(12):1158-1175.

Parnell SC, Magenheimer BS, Maser RL, Pavlov TS, **Havens MA**, Hastings ML, Jackson SF, Ward CJ, Peterson KR, Staruschenko A, Calvet JP (2018). A mutation affecting polycystin-1 mediated heterotrimeric G-protein signaling causes PKD. *Hum Mol Genet*. 2018 Oct 1;27(19):3313-3324. doi: 10.1093/hmg/ddy223.

Ponnath A, **Depreux FF**, Jodelka FM, Rigo F, Farris HE, Hastings ML, Lentz JJ (2018). Rescue of Outer Hair Cells with Antisense Oligonucleotides in Usher Mice Is Dependent on Age of Treatment. *J Assoc Res Otolaryngol*. 2018 Feb;19(1):1-16. doi: 10.1007/s10162-017-0640-x. Epub 2017 Oct 12.

Silveira Villarroel H, **Bompolaki M**, Mackay JP, Miranda Tapia AP, Michaelson SD, **Leitermann RJ**, Marr RA, Urban JH, Colmers WF (2018). NPY induces stress resilience via downregulation of I_h in principal neurons of rat basolateral amygdala. *J Neurosci*. 38(19):4505-4520.

Srivastava AP, Luo M, Zhou W, Symersky J, Bai D, Chambers MG, Faraldo-Gómez JD, Liao M, Mueller DM (2018). High-resolution cryo-EM analysis of the yeast ATP synthase in a lipid membrane. *Science* 360, Issue 6389, eaas9699.

Wang J, Sahoo M, Lantier L, Waraha L, **Cordero H, Deobald K**, Re F (2018). Caspase-11-dependent pyroptosis of lung epithelial cells protects from melioidosis while caspase-1 mediates macrophage pyroptosis and production of IL-18. *PLoS Pathog*, 14(5):e1007105.

Wolf K, Hu H, Isaji T, Dardik A (2018). Molecular identity of arteries, veins, and lymphatics. *Journal of Vascular Surgery*. Aug 2018. doi: 10.1016/j.jvs.2018.06.195.

BOOK CHAPTER

Kumar B, Ramachandran A, Waris G (2018). "Chapter 2: Hepatitis C Virus and Inflammation." I. Shahid (ed.), *Hepatitis C: From Infection to Cure*, IntechOpen, DOI: 10.5772/intechopen.75916.

PRESENTATIONS

Asha K, Sharma-Walia N. March 2018. "Potential therapeutic role of lipoxins in Kaposi's sarcoma-associated herpesvirus (KSHV) lifecycle by regulating chromatin remodeling complex." All School Research Consortium, North Chicago, IL. (Oral Presentation and Poster Presentation)

Asha K, Sharma-Walia N. September 2018. "Potential therapeutic role of lipoxins in Kaposi's sarcoma-associated herpesvirus (KSHV) lifecycle by regulating chromatin remodeling complex." Chicago Area Virology Association Symposium, Chicago, IL.

Bompolaki M. November 2017. "Dendritic retraction of principal neurons and up-regulation of autophagic pathways in the BLA of NPY-induced stress resilient rats." Annual Meeting of the Society for Neuroscience, Washington, DC.

Bompolaki M. June 2018. "Inhibition of the BLA to BST pathway induces behavioral resilience to restraint stress." 2018 Stress Neurobiology Workshop, Banff, Canada.

Bompolaki M. November 2018. "Inhibition of the BLA to BST pathway induces behavioral resilience to restraint stress." Annual Meeting of the Society for Neuroscience, San Diego, CA.

Centa J. November 2017. "Splice switching oligonucleotides for the treatment of juvenile Batten disease." Chicago RNA Club, Chicago, IL.

Centa J. March 2018. "Therapeutic splice switching oligonucleotides for juvenile Batten disease." All School Research Consortium, North Chicago, IL.

Centa J. June 2018. "Therapeutic splice switching antisense oligonucleotides for juvenile Batten disease." RNA Society, Berkeley, CA.

Centa J. September 2018. "Therapeutic splice switching antisense oligonucleotides for juvenile Batten disease." 4th JNCL Young Investigator Symposium, Egham, England.

Centa J. September 2018. "Splice-switching antisense oligonucleotides to correct CLN3 gene expression in Juvenile Neuronal Ceroid Lipofuscinosis." 16th International Conference on Neuronal Ceroid Lipofuscinoses, Egham, England.

Cheung T. June 2018. "Slowpoke, Where'd You Go?" *C. elegans* Neural Development, Synaptic Function & Behavior, Madison, WI.

Fresquez AM, White C. March 2018. "Hydrogen sulfide inhibits store-operated calcium influx by selectively targeting STIM1-Orai3 interactions." All School Research Consortium, North Chicago, IL. (Oral Presentation and Poster Presentation)

Fresquez AM, White C. April 2018. "Hydrogen sulfide inhibits store-operated calcium influx by selectively targeting STIM1-Orai3 interactions." Experimental Biology, San Diego, CA.

Kumar B, Iqbal J, Sarkar-Dutta M, McRae S, Waris G. September 2018. "Osteopontin regulates HCV replication and assembly via interaction with HCV proteins and lipid droplets and by binding to receptors, α V β 3 and CD44." Chicago Area Virology Association Symposium, Chicago, IL.

Loh M. November 2017. "Effects of GSK3 β inhibition and anterior cingulate cortex stimulation on basolateral amygdala inputs into nucleus accumbens." Annual Meeting of the Society for Neuroscience, Washington, DC.

Loh M. March 2018. "Effects of GSK3 β inhibition and anterior cingulate cortex stimulation on basolateral amygdala inputs into nucleus accumbens." Chicago Society for Neuroscience Annual Meeting, Chicago, IL.

Loh M. October 2018. "Participation in multi-dimensional support based research program enhances low income Latinx high school students in the pursuit of higher education and STEM professions." Medical Organization for Latino Advancement (MOLA) Latino Health Symposium, Chicago, IL. (Oral Presentation and Poster Presentation)

Loh M. November 2018. "Modulation of evoked spiking in nucleus accumbens by medial orbitofrontal cortex stimulation." Annual Meeting of the Society for Neuroscience, San Diego, CA.

Loh M. November 2018. "Participation in multi-dimensional support based research program enhances low income Latinx high school students in the pursuit of higher education and STEM professions." Annual Meeting of the Society for Neuroscience, San Diego, CA.

Michaels W. March 2018. "Splice switching antisense oligonucleotides for the treatment of Cystic Fibrosis." All School Research Consortium, North Chicago, IL.

Michaels W. March 2018. "Splice switching antisense oligonucleotides for the treatment of Cystic Fibrosis." North American Cystic Fibrosis Conference, Denver, CO. (Oral Presentation and Poster Presentation)

Mustaly S, Garstka M, Kapecki N, Beaman KD, Gilman-Sachs A, Stutzmann GE. November 2017. "Defects in vacuolar ATP-ase affect lysosome-autophagosome regulation and synaptic vesicles in early stages of Alzheimer's disease." Annual Meeting of the Society for Neuroscience, Washington, DC.

Mustaly S. March 2018. "Defects in vacuolar ATP-ase affect lysosome-autophagosome regulation and synaptic vesicles in early stages of Alzheimer's disease pathogenesis." All School Research Consortium, North Chicago, IL. (Oral Presentation and Poster Presentation)

Mustaly S, Garstka M, Kapecki N, Beaman KD, Gilman-Sachs A, Schrank S, Marr R, McDaid J, Stutzmann GE. March 2018. "Defects in lysosome-autophagosome regulation and synaptic vesicles in Alzheimer's disease mouse models and human induced neurons." Chicago Society for Neuroscience Annual Meeting, Chicago, IL.

Mustaly S, Garstka M, Kapecki N, Beaman KD, Gilman-Sachs A, Schrank S, Marr R, McDaid J, Stutzmann GE. July 2018. "Lysosome-autophagosome defects mediate proteinopathy and synaptic pathophysiology in early stages of Alzheimer's disease." Alzheimer's Association International Conference, Chicago, IL.

Ramachandran A, Waris G. March 2018. "Posttranslational modification of NLRP3 inflammasome." All School Research Consortium, North Chicago, IL.

Ramachandran A, Kumar B, Stratton M, Waris G. September 2018. "Posttranslational modification of NLRP3 inflammasome during HCV infection." Chicago Area Virology Association, Chicago, IL.

Ramachandran A, Kumar B, Stratton M, Waris G. October 2018. "Posttranslational modification of NLRP3 inflammasome during HCV infection." Hepatitis C Virus Conference, Dublin, Ireland.

Repak M, Sharma-Walia N. March 2018. "Targeting nucleolin in Kaposi's sarcoma-associated herpesvirus (KSHV) associated cancers." All School Research Consortium, North Chicago, IL.

Repak M, Sharma-Walia N. September 2018. "Targeting nucleolin in Kaposi's sarcoma-associated herpesvirus (KSHV) associated cancers." Chicago Area Virology Association Symposium, Chicago, IL.

Schrank S. March 2018. "Human induced neurons model hallmarks of Alzheimer's disease." All School Research Consortium, North Chicago, IL. (Oral Presentation and Poster Presentation)

Schrank S. April 2018. "Targeting RYR calcium dysregulation in human induced neurons." Society for Neuroscience, Chicago Chapter, Chicago, IL.

Schrank S. August 2018. "Targeting aberrant calcium release in human induced neurons." Alzheimer's Association International Conference, Chicago, IL.

Sharma-Walia N, **Chandrasekharan J.** April 2018. "Lipoxins and their role in Kaposi's sarcoma-associated herpesvirus (KSHV) infection and pathogenesis." American Association for Cancer Research Annual Meeting, Chicago, IL.

Sharma-Walia N, **Chandrasekharan J.** April 2018. "Lipoxins and their role in Kaposi's sarcoma-associated herpesvirus (KSHV) infection and pathogenesis." Combined CSCTR-MWAFMR Annual Meeting, Chicago, IL.

*Names in **bold** indicate current/former SGPS graduate students or postdocs.*

SCIENCE, FOR ME,
GIVES A PARTIAL
EXPLANATION FOR
LIFE. IN SO FAR
AS IT GOES, IT IS
BASED ON FACT,
EXPERIENCE AND
EXPERIMENT.

ROSALIND FRANKLIN, PhD
1920-1958





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